

WHAT IS CLAIMED IS:

1. A thermal transfer system comprising:
a container for receiving a medium;
a structure positioned in said container;
a first heat exchange member at least partially coupled to an interior
surface of said container;
a second heat exchange member at least partially coupled to said
structure wherein a portion of said first heat exchange member is placed in
close proximity to a portion of said second heat exchange member to aid
formation of a thermal transfer bridge that improves conduction of heat into or
out of the medium.

2. A thermal transfer system as in claim 1 wherein:
a heating or cooling device is coupled to and provides heating or
cooling of said container.

3. A thermal transfer system as in claim 1 wherein:
a heating or cooling device is coupled to and provides heating or
cooling of said structure positioned inside said container.

4. A thermal transfer system as in claim 1 wherein:
a heating or cooling device is coupled to and provides heating or
cooling of said structure and said container.

5. A thermal transfer system as in claim 1 wherein:
there is a plurality of heat exchange members.

6. A thermal transfer system as in claim 1, further comprising:
a removable liner configured to cover at least a portion of said first
heat exchange member.

1 7. A thermal transfer system as in claim 1, further comprising:
2 a removable liner configured to cover at least a portion of said second
3 heat exchange member.

1 8. A thermal transfer system as in claim 1, further comprising:
2 a removable liner configured to cover at least a portion of said first
3 heat exchange member and said second heat exchange member.

1 9. A thermal transfer system as in claim 1 wherein:
2 a volume of said container is in the range from substantially 1 liter to
3 250 liters.

1 10. A thermal transfer system as in claim 1 wherein:
2 a volume of said container is in the range from substantially 250 liter to
3 10,000 liters.

1 11. A thermal transfer system as in claim 1 wherein:
2 a distal end of said first heat exchange member contacts at least a
3 portion of a distal end of said second heat exchange member.

1 12. A thermal transfer system as in claim 1 wherein:
2 a distance between said distal end of said first heat exchange member
3 and a distal end of said second heat exchange member is a non-contacting
4 distance not greater than one inch.

1 13. A thermal transfer system as in claim 1 wherein:
2 the container comprises a jacket defining an interstitial space
3 positioned between the jacket and a wall of the container for receiving a flow

4 of a cooling fluid said jacket further including a plurality of spiral baffles for
5 enhancing thermal exchange between said fluid and said container.

1 14. A thermal transfer system as in claim 1 wherein:
2 said medium is substantially uniformly heated or cooled.

1 15. A thermal transfer system as in claim 1 wherein:
2 said medium is heated or cooled in substantially one direction relative
3 to said structure.

1 16. A thermal transfer system as in claim 1 wherein:
2 said heat exchange members are positioned to induce a thermal
3 gradient in said medium such that said thermal gradient is in a predetermined
4 direction.

1 17. A thermal transfer system as in claim 1 wherein:
2 said medium is heated or cooled in a predetermined direction.

1 18. A thermal transfer system as in claim 1 wherein:
2 said medium is heated or cooled such that the thermal gradient is in a
3 predetermined direction.

1 19. A thermal transfer system as in claim 1 wherein:
2 said medium is heated or cooled at a predetermined rate.

1 20. A thermal transfer system as in claim 1 wherein:
2 said medium is heated or cooled such that the thermal gradient is in a
3 predetermined direction and said heating or cooling occurs at a predetermined
4 rate.

1 21. A thermal transfer system as in claim 1 wherein:
2 said medium is a biopharmaceutical product.

1 22. A thermal transfer system as in claim 1 wherein:
2 said container has a nonporous bottom.

1 23. A thermal transfer system as in claim 1 wherein:
2 said container has nonporous walls.

1 24. A thermal transfer system as in claim 1 wherein:
2 said container has a top.

1 25. A thermal transfer system as in claim 1 wherein:
2 said container has a nonporous top.

1 26. A thermal transfer system as in claim 1 wherein:
2 a portion of said first heat exchange member is configured to improve
3 the thermal transport of said thermal transfer bridge.

1 27. A thermal transfer system as in claim 1 wherein:
2 a portion of said second heat exchange member is configured to
3 improve the thermal transport of said thermal transfer bridge.

1 28. A thermal transfer system as in claim 1 wherein:
2 a portion of said first heat exchange member is configured to improve
3 the thermal transport of said thermal transfer bridge and a portion of said
4 second heat exchange member is configured to improve the thermal transport
5 of said thermal transfer bridge.

1 29. A thermal transfer system as in claim 1 wherein:

said second heat exchange member is placed at an end of said structure.

30. A thermal transfer system as in claim 1 wherein:
a heat exchange fluid flows within the structure.

31. A thermal transfer system as in claim 1 wherein:
a heat exchange fluid flows within the first heat exchange member.

32. A thermal transfer system as in claim 1 wherein:
an interior portion of the first heat exchange member has baffles.

33. A thermal transfer system as in claim 1 wherein:
the first heat exchange member is configured to maximize an area of a
surface of the heat exchange member that is in contact with the medium.

34. A thermal transfer system as in claim 1 wherein:
a heat exchange extension is at least partially coupled to the first heat
exchange member.

35. A thermal transfer system as in claim 1 wherein:
the medium includes proteins.

Add B17